Hochschule
Bonn-Rhein-Sieg
University of Applied Sciences

Fachbereich Informatik
Department of Computer Science

Performance estimation and optimization of the IEEE802.11 MAC layer for long distance point-to-point links

by

Michael Rademacher

First supervisor:	Prof. Dr. Karl Jonas
Second supervisor:	Prof. Dr. Kerstin Uhde
Handed in:	January 15,2014

Persönliche Erklärung

"Erklärung"

Hiermit erkläre ich an Eides Statt, dass ich die vorliegende Arbeit selbst angefertigt habe; die aus fremden Quellen direkt oder indirekt übernommenen Gedanken sind als solche kenntlich gemacht. Die Arbeit wurde bisher keiner Prüfungsbehörde vorgelegt und auch noch nicht veröffentlicht.

Bonn, (January 15,2014) _____

(Michael Rademacher)

Contents

List of Tables

List of Figures

DCF Distributed Coordination Function

1 Introduction

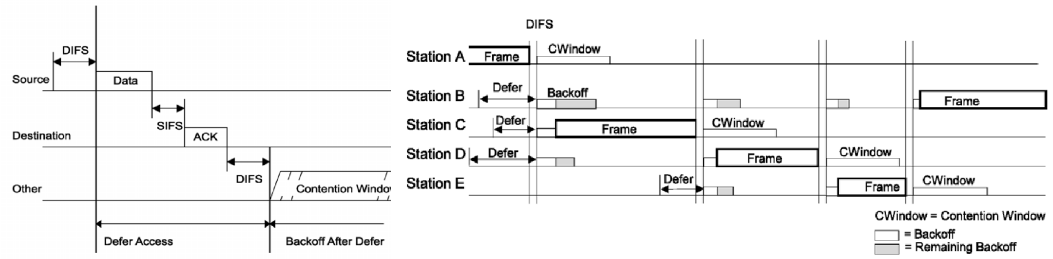
This is the introduction of an awesome thesis. In the following are some usefull examples.

Here is a cool table 1 you can reference it in the text.

Table 1: State of the art of analytical models for the EDCA

Publication	Assumptions		Metric		Validation		Origin	
	Saturated	Ideal channel	Throughput	Delay	Simul.	Experim.	Cali	Bianchi
[RR04]	✓	✓	✓		✓			✓
[MHW03]	✓	✓	✓		✓			✓
[KTBG04]	✓	✓	✓	✓	✓			✓
[EO05]			✓	✓	✓			✓
[BV05]	✓	✓			✓		✓	

Here is a cool figure. It is even a subfigure.



(a) Basic access [iee12, p. 838] (b) Back-off procedure [iee12, p. 839]

Figure 1: Distributed Coordination Function (DCF)

References

[BV05] A. Banchs and L. Vollero. A delay model for IEEE 802.11e EDCA. *Communications Letters, IEEE*, 9(6):508–510, 2005.

[EO05] P. Engelstad and O. Osterbo. Delay and Throughput Analysis of IEEE 802.11e EDCA with Starvation Prediction. In *The IEEE Conference on Local Computer Networks*, pages 647–655, 2005.

[iee12] IEEE Standard for Information technology-Telecommunications and information exchange between systems Local and metropolitan area networks-Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications. *IEEE Std 802.11-2012 (Revision of IEEE Std 802.11-2007)*, pages 1–2793, Feb 2012.

[KTBG04] Z.-N. Kong, D. H. K. Tsang, B. Bensaou, and D. Gao. Performance analysis of IEEE 802.11e contention-based channel access. *IEEE Journal on Selected Areas in Communications*, 22(10):2095–2106, 2004.

[MHW03] S. Mangold, G. Hiertz, and B. Walke. IEEE 802.11e wireless LAN - resource sharing with contention based medium access. In *Proceedings on 14th IEEE Personal, Indoor and Mobile Radio Communications*, volume 3, pages 2019–2026, 2003.

[RR04] J. Robinson and T. Randhawa. Saturation throughput analysis of IEEE 802.11e enhanced distributed coordination function. *IEEE Journal on Selected Areas in Communications*, 22(5):917–928, 2004.